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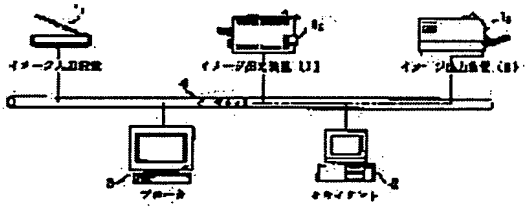
(54) DOCUMENT PROCESSING SYSTEM

(57)Abstract:
PROBLEM TO BE SOLVED: To structure a document processing system which is increased in use efficiency and actualizes the improvement of the total performance as a system by properly performing processes only by inputting a request for document operation without previously grasping the state of a processor by a user, adjusting the uses of each of image data processors such as printers decentralized in a network according to the contents of a process job, and placing them in cooperative operation.



SOLUTION: Each of processors such as a job image input device 11 informed that a client 2 made a request for a job through a broker 2 managing jobs in the system at one place inform the broker 3 of job acquisition requests when the job can be processed. The broker sends a request to proper processors and the requested image input device 11 and image output device (II) 13 register the process progress in the broker by pages and advance the process cooperatively while referring to the progress.

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3/12		3/12	Ｄ	

審査請求　未請求　請求項の数７　ＯＬ　（全９頁）

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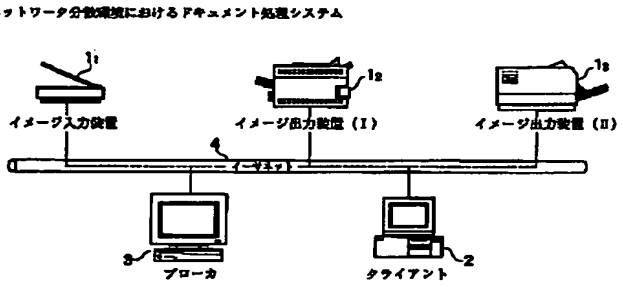
Ｆターム(参考)　5B021 AA01 BB02 EE03

(54)【発明の名称】　ドキュメント処理システム

(57)【要約】
【課題】　利用者が事前に処理装置の状態を把握しなくても、ドキュメント操作の要求を入力するだけで処理が適切に実行され、処理ジョブの内容に応じてネットワーク上に分散されたプリンタ等の各イメージデータ処理装置の使用を調整し、協調動作させることにより、利用効率を上げ、システムとしてのトータルなパフォーマンスの向上を実現するドキュメント処理システムを構築する。
【解決手段】　システム内のジョブを一元管理するブローカ３を介しクライアント２からジョブの要求があったことを通知されたジョブイメージ入力装置１$_1$等の各処理装置は処理可能な場合にジョブ獲得要求をブローカ３に通知する。ブローカではその中から適切な処理装置に処理依頼し、依頼されたイメージ入力装置１$_1$とイメージ出力装置（　）１３はページ毎に処理経過をブローカに登録し、その経過を参照しながら協調して処理を進める。。



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【特許請求の範囲】

【請求項１】　処理ジョブ情報に従いイメージデータをドキュメント化処理する複数のイメージデータ処理装置がネットワークを介して分散配置されているドキュメント処理システムにおいて、システム内のイメージデータの処理ジョブ情報を共通情報として登録し、参照可能としたことを特徴とするドキュメント処理システム。

【請求項２】　処理ジョブ情報に従いイメージデータをドキュメント化処理する複数のイメージデータ処理装置がネットワークを介して分散配置されているドキュメント処理システムにおいて、システム内のイメージデータの処理ジョブ情報の受け付け、処理ジョブの実行により得られるドキュメントのサービス及びジョブ処理の進行をネットワーク上で一元管理するジョブ管理手段を備えることを特徴とするドキュメント処理システム。

【請求項３】　前記複数のイメージデータ処理装置の各々は、能動的にイメージデータの処理ジョブを獲得することを特徴とする請求項１又は２記載のドキュメント処理システム。

【請求項４】　前記複数のイメージデータ処理装置の各々は、前記ジョブ管理手段の管理下の処理ジョブ情報を参照することにより処理対象ドキュメントをオンデマンドでネットワークを介して取得することを特徴とする請求項２又は３記載のドキュメント処理システム。

【請求項５】　前記ジョブ管理手段の管理下の処理ジョブ情報により処理途中にある一連のジョブ単位の処理状況を監視可能とし、監視結果に従い前記複数のイメージデータ処理装置の各々が状態遷移を引き起こすことによりジョブ処理を実行することを特徴とする請求項２乃至４のいずれかに記載のドキュメント処理システム。

【請求項６】　前記ジョブ管理手段は、処理ジョブの管理情報として、前記複数のイメージデータ処理装置の各々の動作仕様及びエラー履歴を情報として保有することを特徴とする請求項２ないし５のいずれかに記載のドキュメント処理システム。

【請求項７】　前記イメージデータ処理装置が入力情報をイメージデータ化するイメージ入力装置、イメージデータを保存するイメージデータ蓄積装置、及びイメージデータをもとにそのイメージをプリント出力するイメージ出力装置の少なくとも一つからなることを特徴とする請求項１ないし６のいずれかに記載のドキュメント処理システム。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、イメージデータをドキュメント化処理する装置である、スキャナ等のイメージ入力装置、イメージデータ蓄積装置、プリンタ等のイメージ出力装置、がネットワークを介して分散配置されるドキュメント処理システムに関し、処理ジョブの実行をネットワーク上で一元管理するようにした該システムに関する。

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【０００２】

【従来の技術】従来からパーソナルコンピュータやワークステーション等のホスト機器とプリンタ等の画像出力装置をネットワークを介して接続し、ホスト機器から送信される印刷ジョブを受けたプリンタでそのジョブを実行することにより紙ドキュメントを出力させるようにしたプリンタシステムが存在する。また、近年、プリンタのみならずイメージ入力装置、プリンタ等のイメージ出力装置、イメージ蓄積装置等の複数の異なるイメージデータ処理装置をネットワーク上に分散して配置し、ドキュメント処理システムを構築することが一般化しつつある。これらのシステムにおいて、イメージデータ処理装置をプリンタとした場合を例にすると、ホスト機器（処理要求元）から印刷ジョブを送信する場合、ホスト機器側が処理を依頼するプリンタを特定し、事前にそのプリンタの状態を把握した上で、印刷ジョブを送信するという方法をとっている。したがって、能力の異なるプリンタがシステム要素として接続されている場合、処理される個々の印刷ジョブに最も適した能力のプリンタが効率良く用いられているとは限らないことから、印刷ジョブ処理システムとしてのトータルのパフォーマンスを悪くしている。

【０００３】

【発明が解決しようとする課題】本発明は、上記した従来のプリンタシステム等のドキュメント処理システムの問題点に鑑みてなされたもので、その目的は、クライアント装置が事前に処理を依頼しようとする各処理装置の状態を把握しなくても、ドキュメント操作の要求を入力するだけで処理が適切に実行され、処理しようとする処理ジョブの内容に応じてネットワーク上に分散されたプリンタ等の各イメージデータ処理装置の使用を調整し、協調動作させることにより、利用効率を上げ、ドキュメント処理システムとしてのトータルなパフォーマンスの向上を実現するドキュメント処理システムを構築することにある。

【０００４】

【課題を解決するための手段】請求項１の発明は、処理ジョブ情報に従いイメージデータをドキュメント化処理する複数のイメージデータ処理装置がネットワークを介して分散配置されているドキュメント処理システムにおいて、システム内のイメージデータの処理ジョブ情報を共通情報として登録し、参照可能としたことを特徴とするドキュメント処理システムを構成する。

【０００５】請求項２の発明は、処理ジョブ情報に従いイメージデータをドキュメント化処理する複数のイメージデータ処理装置がネットワークを介して分散配置されているドキュメント処理システムにおいて、システム内のイメージデータの処理ジョブの受け付け、該処理ジョブによるドキュメントのサービス及びジョブ処理の進行

をネットワーク上で一元管理するジョブ管理手段を備えることを特徴とするドキュメント処理システムを構成する。

【０００６】請求項３の発明は、請求項１又は２記載のドキュメント処理システムにおいて、前記複数のイメージデータ処理装置の各々は、能動的に（共通情報として登録された処理ジョブ情報を参照することによりイメージデータ処理装置側から処理ジョブの要求を行い）イメージデータの処理ジョブを獲得することを特徴とするものである。

【０００７】請求項４の発明は、請求項２又は３記載のドキュメント処理システムにおいて、前記複数のイメージデータ処理装置の各々は、前記ジョブ管理手段の管理下の処理ジョブ情報を参照することにより処理対象ドキュメントをオンデマンドでネットワークを介して取得することを特徴とするものである。

【０００８】請求項５の発明は、請求項２乃至４のいずれかに記載のドキュメント処理システムにおいて、前記ジョブ管理手段の管理下の処理ジョブ情報により処理途中にある一連のジョブ単位の処理状況を監視可能とし、監視結果に従い前記複数のイメージデータ処理装置の各々が状態遷移を引き起こすことによりジョブ処理を実行することを特徴とするものである。

【０００９】請求項６の発明は、請求項２乃至５のいずれかに記載のドキュメント処理システムにおいて、前記ジョブ管理手段は、処理ジョブの管理情報として、前記複数のイメージデータ処理装置の各々の動作仕様及びエラー履歴を情報として保有することを特徴とするものである。

【００１０】請求項７の発明は、請求項１乃至６のいずれかに記載のドキュメント処理システムにおいて、前記イメージデータ処理装置が入力情報をイメージデータ化するイメージ入力装置、イメージデータを保存するイメージデータ蓄積装置、及びイメージデータをもとにそのイメージをプリント出力するイメージ出力装置の少なくとも一つからなることを特徴とするものである。

【００１１】

【発明の実施の形態】本発明によるドキュメント処理システムを添付図面とともに示す以下の実施例により説明する。図１にこの実施例のハードウエア構成を示し、図２にそのソフトウエア構成を示す。図１に示す実施例のシステムは、基本的な構成を示すもので、スキャナ及びプリンタ機能を備えたイメージ入出力装置１、ＰＣ（パーソナルコンピュータ）２、ブローカ３及びネットワーク４をシステム要素とする。以下に、各システム要素のハードウェア構成とその機能について説明する。

【００１２】・イメージ入出力装置

イメージ入出力装置１は、装置全体の制御を司るものとしてプロセッサ ＣＰＵ）１０を有し、その制御下にＲＯＭ１１、ＲＡＭ１２、ＮＶＲＡＭ１３、操作パネル１４とパネル制御部１５、スキャン／プリント・エンジン１６とエンジン制御部１７、記憶装置１８とディスクドライバ１９、通信制御部２０、モデム２１が接続されている。メモリとして用意されたＲＯＭ１１、ＲＡＭ１２、ＮＶＲＡＭ１３の中、ＲＯＭ１１には、プログラムコード、フォント、及びその他の静的なデータが格納され、ＲＡＭ１２は、一時的な記憶場所として利用され、また、ＮＶＲＡＭ１３には、不揮発性のデータが格納される。操作パネル１４とパネル制御部１５は、ユーザとのインターフェイスを司り、ユーザによる入出力操作のための表示部と入力部を含む。スキャン／プリント・エンジン１６とエンジン制御部１７は、イメージデータの入出力ユニットとして、紙原稿の読み取りと転写紙への印刷を実行する。なお、この装置では入出力部がユニットとして一体化されているが、本発明のシステムにおいて、ネットワーク４を介して機能する場合、クライアント（ここでは、ＰＣ２）からの要求に応じてイメージデータの入力或いは出力処理を単独に行う装置として働く物であると理解して良い。記憶装置１８とディスクドライバ１９は、イメージデータなどの大量のデータを蓄積したり、データベースの記憶場所を提供し、そこへデータを出し入れするために利用される。通信制御部２０は、イーサネット等のネットワークに接続され、外部の機器との通信を可能とする。ここでは、パラレルインターフェイス、シリアルインターフェイスなどによるピアトゥピアの接続形態も可能とする。モデム２１は、公衆回線と接続され、外部の機器との通信を可能とする。

【００１３】・ブローカ

ブローカ３は、ネットワーク４に接続されているイメージ入出力装置１に必要な機能情報やジョブ管理などの管理情報を共有情報として維持し、システム内のイメージデータの処理ジョブの受け付け、該処理ジョブにより得られるドキュメント等のサービスの提供及びジョブ処理の進行をネットワーク上で一元管理するジョブ管理を行い、クライアント（ＰＣ２）とサーバ（ここでは、イメージ入出力装置１）の接続を確立する役目を請け負うミドルウエアである。ブローカ３は、ＣＰＵ３０、ＲＯＭ３１、ＲＡＭ３２、通信制御部３３及びデータベース３４を備えているものであり、ＰＣ２あるいはイメージ入出力装置１のどちら側に存在していてもよい。

【００１４】上記したイメージ入出力装置１に関わるソフトウエア構成とその働きを以下に説明する。図２は、装置内部の組み込みソフトウェアの構造を示す。図２に示すように、このソフトウエア構成は、大きく分けると、上位から下位にアプリケーション層、カーネル層、ドライバ層、ハードウエア層の４層の構造からなる。アプリケーション層は、コピー・ファクス・プリンタなどのアプリケーションを形成するレイヤーである。レイヤー中のドキュメントマネージャは、コピー・ファクス・プリンタなどのシナリオに沿ってドキュメントをハンド

リングするアプリケーションで、アプリケーションとしては中心となる機能ブロックである。サービスマネージャは、ドキュメントハンドリングの際に共通に必要となる機能ブロックであり、各種サービスの管理・実行を行う。デバイスマネージャは、スキャナ・プロッタ・画像バスといった物理デバイスの動作を決定する機能ブロックであり、各種デバイスの管理・実行を行う。オペレーションマネージャは、装置に付属している操作パネルを制御するものであり、ボタンの表示・ボタンオペレーションのノーテイフアイ・アラートの通知などを行う。データベースマネージャは、フォント・定形フォーム・ファクス受信履歴・装置の利用履歴・課金データなどの永続データの維持管理を行う。

【００１５】カーネル層は、通常ＯＳのカーネルとして組み込まれ、各種デバイスを抽象化してアプリケーションに対しサービスを提供するものであり、アプリケーション層はカーネル層に対しシステムコールすることにより動作する。ドライバ層は、各種ハードウェアを駆動するための制御を実行する機能ブロックの集まりである。ハードウェア層は、装置内に存在する制御可能なリソースの集合である。

【００１６】次に、上記したシステムを基本にして、イメージデータ処理装置としてイメージ入力或いはイメージ出力のいずれかの機能を単独の装置に持たせ、ネットワーク上に分散配置したシステムの実施例を示す。図３は、この実施例のシステム構成を示し、図４は、図３のシステムの動作の１例を各システム要素間のインタラクションにより示すものである。この実施例のシステムの構成とその動作を図３及び図４に基づき説明する。システム構成は、図３に示すように、イメージデータ処理装置としてイメージ入力装置1_1、イメージ出力装置（Ｉ）1_2、イメージ出力装置（　）1_3を分散させ、ブローカ３、クライアント（ＰＣ）２とともにネットワーク４（この例では、イーサネットを構成する）上に配置する。

【００１７】利用者は、クライアントＰＣ２（或いは、イメージ入力装置1_1）から、ドキュメント処理を行う対象ドキュメントの指定と、処理仕様を入力し、ブローカ３に対し処理要求をすると、対象ドキュメントと共に処理仕様は、ドキュメント操作ジョブとして、ブローカ３に登録される（Ｓ１（図４参照、以下同様））。ブローカ３は、クライアント２からドキュメント操作ジョブが到着したことを、システム内のイメージ入力装置1_1、イメージ出力装置（Ｉ）1_2、イメージ出力装置（　）1_3等に通知する（Ｓ２）。

【００１８】各処理装置（イメージ入力装置1_1、イメージ出力装置（Ｉ）1_2、イメージ出力装置（　）1_3、イメージ蓄積装置）は、この通知を受けて、ドキュメント操作ジョブの処理内容を取得する（Ｓ３）。各処理装置において、それぞれが持つ処理能力に照らして取得した操作ジョブの処理内容を処理可能かどうかを判断し、処理可能な場合は、ジョブ獲得要求をブローカ３に通知する（Ｓ４）、つまり処理装置側から能動的にジョブの獲得を行うための働きかけをする。

【００１９】ブローカ３では、複数の処理装置からジョブ獲得要求が有ったとすると、ブローカ３では、この複数のジョブ獲得要求を吟味し、適切な処理装置に処理依頼を通知する（Ｓ５）。図４の実施例によれば、イメージ入力装置1_1、とイメージ出力装置（　）1_3に処理依頼を通知している。この場合、依頼した処理内容は、イメージ入力装置1_1でイメージで他を生成し、生成されたイメージデータをもとにしてイメージ出力装置（　）1_3でそれを紙ドキュメントとして出力するという設定である。処理を依頼された処理装置は、処理対象のドキュメントをブローカ３から取得する（Ｓ６）。前記した設定の場合、イメージ入力装置1_1は対象ドキュメントの指定情報を取得し、イメージ出力装置（　）1_3はイメージ入力装置1_1が処理し出力するイメージデータ（電子ドキュメント）を処理対象ドキュメントとして取得する。処理対象ドキュメントを得た各処理装置は、処理内容に従って処理を行う。また、その処理経過をブローカ３にドキュメント操作ジョブとして登録する（Ｓ７）。以降、処理装置は、ドキュメント操作ジョブを監視、改定しながら動作を進める（Ｓ７）。結果として、各処理装置が協調して、ドキュメント操作ジョブを実行することになる。設定例では、例えば、イメージ入力装置1_1とイメージ出力装置（　）1_3はページ毎にその処理経過を見ながら協調して処理を進めることが出来る。ジョブの実行を終了すると、ブローカ３は、完了通知をクライアントに送る（Ｓ８）。

【００２０】上記したシステムの動作をネットワークの形成という点からより詳細に説明する。このシステムでは、オーナ（要求処理元、上記した例ではクライアントＰＣ２或いはイメージ入力装置1_1）は、ドキュメントを生成しオープンすることで、ドキュメント設定者及び監視者として認識される。すなわち、オーナは、共有文書の生成と消滅、及び、オープンとクローズに責任を持つ。また、サーバ（各イメージデータ処理装置）は、監視したいドキュメントを指定し、アタッチすることで、監視者として認識される。すなわち、サーバは、ドキュメント形成時に、ブローカ３からの文書の生成通知に呼応してアタッチを行い、解除時に、文書のクローズ通知あるいはキャンセル通知に呼応してデタッチを行う。上記した原則に従ってオーナとサーバがブローカを介して行う通信の際に形成されるネットワークとその形成手順について、以下に説明する。

【００２１】・通信ネットワークの形成手順

図５は、通信ネットワークの形成手順を説明する図である。通信ネットワークの形成手順は、ドキュメントの（１）生成→（２）アタッチ→（３）オープン、とそれ

らの応答手順で構成され、図５中の番号は、その手順を示すために付している。図５に示すように、オーナは、ドキュメントを生成し、それをドキュメント操作ジョブとして処理装置に通知し、ドキュメント操作ジョブを監視する処理装置がそれを知りアタッチする。　オーナは、生成したドキュメントをオープンし、ブローカがオープン通知という形式で処理依頼するサーバを選択しその処理依頼に従い選択されたサーバが処理を実行する。＊

（１）生成と生成通知
（２）アタッチとアタッチ通知
（３）オープンとオープン通知

となる。

【００２３】図７は、キャンセルによる通信ネットワークの解除手順を説明する図である。なお、図７中の番号は、その手順を示すために付している。通信ネットワークの解除要因として、上記したクローズの他にキャンセルがある。両方とも、オーナから送信されてくる。クローズは共有文書が正常に処理された場合の終了処理であるのに対し、キャンセルは共有文書の処理を無効なものとする終了処理である。キャンセルによる通信ネットワークの解除手順は、クローズの場合（図６）と同様で、図７に示すように、クローズ通知がキャンセル通知に変わるだけである。但し、オーナとサーバは、キャンセルされたことを受けて、共有ページの状態を所定の状態とした上で、（５）デタッチ及び（６）消滅を指示しなければならない。

【００２４】・ドキュメント情報の更新と通知手順
図８は、ドキュメント情報の更新と通知手順を説明する図である。ドキュメントの更新は、オーナのみが可能な処理ジョブである。ドキュメントが更新されると、アタッチされているすべてのサーバ、即ち、図示の例ではアタッチしているサーバ１とサーバ３、に更新された事象を通知する。通知情報は、更新されたという事象（イベント種類）である。

【００２５】・ページ情報の更新と通知手順
図９は、ページ情報の更新と通知手順を説明する図である。ページ情報は、オーナ及びサーバから更新される。図９の（A）は前者の例を、同図の（B）は後者の例を示す。更新されたという事象は、更新者自身を除くオーナも含めた監視者全てに通知される（図示の（A）の例ではアタッチしているサーバ１とサーバ３、図示の（B）の例ではオーナとサーバ３）。すなわち、更新元以外のオーナとアタッチしている全てのサーバに通知される。通知情報は、更新に伴うページの状態（ステート種類）である。

【００２６】システムの動作として、各処理装置はその処理経過をブローカ３にドキュメント操作ジョブとして登録するので、複数の処理装置が互いにドキュメント操作ジョブを監視、改定しながら協調して、一連のドキュメント操作ジョブを実行することが可能となる。その場

＊【００２２】・通信ネットワークの解除手順図６は、クローズによる通信ネットワークの解除手順を説明する図である。通信ネットワークの解除手順は、通信ネットワークの形成と逆の手順を行う。すなわち、解除手順は、ドキュメントの（４）クローズ→（５）デタッチ→（６）消滅、で構成される。なお、図６中の番号は、その手順を示すために付している。通信ネットワークの形成と解除を対比させると、

→　（６）消滅
→　（５）デタッチとデタッチ通知
→　（４）クローズとクローズ通知

合に用いる方法について次に説明する。上記で例示したイメージ入力装置1_1で生成され出力するイメージデータをもとにしてイメージ出力装置（　）1_3で紙ドキュメントを出力させるという動作を再び例にすると、例えば、図１０に示すページ状態遷移を行うアルゴリズムによりこの処理を実施することが可能となる。このページの状態遷移アルゴリズムは、ブローカ３に共有情報として登録されるイメージ入力装置1_1及びイメージ出力装置（　）1_3のページ単位のジョブ状態からそのジョブ状態の遷移を把握することにより、イメージ入力装置１1及びイメージ出力装置（　）1_3におけるページジョブの進行を一元的に管理しようとするものである。

【００２７】図１０において、まず、クライアント２から受けたジョブの実行が休眠した状態（Ｓ１１）から状態遷移が始まる。この状態からブローカ３は、受け付けたドキュメントの処理を依頼したイメージ入力装置1_1がドキュメントを取得したことを知ることにより、生産可能な状態（Ｓ１２）へ状態を移行させる。即ち、状態Ｓ１において、イメージ入力装置1_1によりドキュメント処理が実行されていることを示す。その後、イメージ入力装置1_1でこのジョブが実行（生産）され、ページ毎にそのジョブの終了が知らされ、処理されたページデータが消費可能（Ｓ１４）になったこと状態遷移として示す。その状態変化を知ったイメージ出力装置（　）13がイメージ入力装置1_1により処理、作成されたページデータを用い画像出力、例えばプリントアウト（消費）し、ジョブを終了することによりそのページデータを廃棄可能になったことを状態遷移として示す（Ｓ１６）。なお、上記したような状態遷移に従い正常にジョブが実行される場合だけではなく、廃棄される場合があり、それはイメージ入力装置1_1或いはイメージ出力装置（I）1_3においてジャム等が発生しそれぞれ生産或いは消費に失敗した場合（Ｓ１３，Ｓ１５）、又は、ジョブの実行をキャンセルし、ジョブを中止する場合であり、この場合についても状態遷移としてこれを示す。このように、ブローカ３においてページ毎にジョブの遷移状態を共通情報として管理し、この情報により、クライアント２は、処理の実行状況を監視することが出来、各サーバは与えられた処理の実行タイミングを知ることができ

る。

【００２８】また、ブローカ３では、共有情報として、ジョブの動作状況以外に処理装置の動作仕様及びエラー履歴を情報として保有し、処理装置の能力を考慮してそれらの組み合わせを定義することによる機能提供方式や要求に応じた処理装置の割り当て、さらには、エラー時の代替処理の設定を行い、ネットワークの構築を可能とする。また、メソッドを能力交換することにより、新仕様に対応した時の、クライアント装置とサーバ装置、或いはサーバ装置間の動作の不整合をなくす。即ち、バージョンアップによるネットワーク環境の再構築を不要とする。図１１は、上記した機能に必要なデータ構造とその利用法を説明するための概念図である。図１１において示すように、動作仕様（Ｓｐｅｃ１ Ｓｐｅｃ２）、エラー情報（Ｅｒｒ－１）のデータをパケットクラスとして保有する。パケットクラスに用意された動作仕様とエラーデータをパックし、アンパックするようなパケットオブジェクトを共有情報とし、そのメソッドをｇｅｔ（），ｓｅｔ（）にて定義する。また、メソッドを提供する実行オブジェクトを交換することで、仕様情報やエラー情報が、バージョンアップされた時も動作することが可能となる。

【００２９】

【発明の効果】請求項１の発明によると、ドキュメント処理システムの利用者は、特定の装置を意識することなく（従来のように特定の装置を指定しなくて良い）、ドキュメント処理要求を投入でき、要求されたドキュメント処理の実行に際し、個別処理装置の能力がボトルネックになることがなく、装置を選択可能にして最適な装置を選択することが可能となるため、各装置が効率よく動作しドキュメント処理システムとしてのトータルなパフォーマンス向上を可能とする。

【００３０】請求項２の発明によると、利用者は、各処理装置の状態を全て事前に把握しなくても、ドキュメント操作（紙ドキュメントから電子ドキュメントの生成、電子ドキュメント同士の伝達及び電子ドキュメントから紙ドキュメントの生成）の要求を入力するだけで良く、要求されたドキュメント操作は、ジョブを一元管理する管理手段により最適な装置を選択することにより実行されるため、各装置が効率よく動作しドキュメント処理システムとしてのトータルなパフォーマンス向上が可能となる。

【００３１】請求項３の発明によると、請求項１及び２の発明の効果に加え、動作可能な処理装置のみがジョブを獲得に行くため、従来のように指定した装置が停止中（ジャムやメンテナンスなど）の場合に処理不能となることが回避でき、また、ジョブ獲得の意志のある装置から、さらに装置を選択可能にして最適な装置を選択することができ、システムとしてのトータルなパフォーマンスをさらに向上させることができる。

【００３２】請求項４の発明によると、請求項２及び３の発明の効果に加え、各処理装置が一元管理された処理ジョブ情報を参照することにより、処理対象ドキュメントをオンデマンドでネットワークを介して取得するために、画像データの通信量を減らすことができる。

【００３３】請求項５の発明によると、請求項２乃至４の発明の効果に加え、処理途中にある一連のジョブ単位のドキュメント操作の実行状況を細かく監視することが可能となり、ページ単位の進捗状況や、ドキュメントとしての進捗状況からその状態遷移を把握しジョブ処理の実行が可能となる。

【００３４】請求項６の発明によると、請求項２乃至５の発明の効果に加え、共有情報として、ジョブの動作状況以外に処理装置の動作仕様及びエラー履歴を情報として保有し、処理装置の能力を考慮してそれらの組み合わせを定義することによる機能提供方式や要求に応じた処理装置の割り当て、さらには、エラー時の代替処理の設定を行い、ネットワークの構築（入力装置としてのスキャナ装置や出力装置としてのプリンタ装置などの、組み合わせを定義し、エラー時の回避装置の決定などを構築）を可能とする。また、メソッドを能力交換することにより、新仕様に対応した時の、クライアント装置とサーバ装置、或いはサーバ装置間の動作の不整合をなくす。即ち、バージョンアップによるネットワーク環境の再構築を不要とする。

【００３５】請求項７の発明によると、請求項１乃至６の発明の効果を、ドキュメント処理システムを構成するイメージデータ処理装置として、入力情報をイメージデータ化するイメージ入力装置（紙ドキュメントから電子ドキュメントを生成）、イメージデータを保存するイメージデータ蓄積装置（電子ドキュメント同士の伝達）、及びイメージデータをもとにそのイメージをプリント出力するイメージ出力装置（電子ドキュメントから紙ドキュメントを生成）を用いたドキュメント処理システムにより具現化するものである。

【図面の簡単な説明】

【図１】本発明によるドキュメント処理システムの実施例のハードウエア構成を示す。

【図２】本発明によるドキュメント処理システムの実施例のソフトウエア構成を示す。

【図３】本発明によるドキュメント処理システムの実施例のシステム構成を示す。

【図４】図３のシステムの動作の１例を各システム要素間のインタラクションにより示す。

【図５】通信ネットワークの形成手順を説明する図である。

【図６】クローズによる通信ネットワークの解除手順を説明する図である。

【図７】キャンセルによる通信ネットワークの解除手順を説明する図である。

【図８】ドキュメント情報の更新と通知手順を説明する図である。

【図９】ページ情報の更新と通知手順を説明する図である。

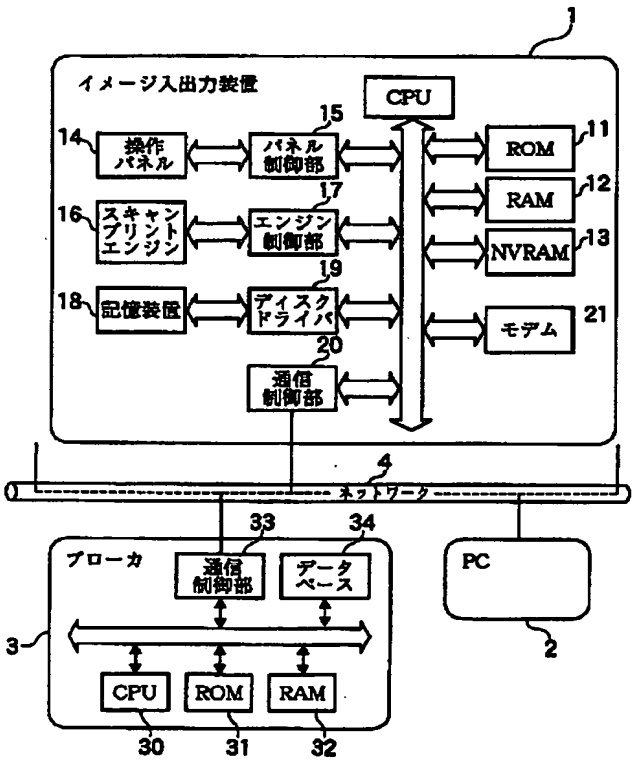
【図１０】共有情報として管理されるページ処理ジョブの状態遷移図である。

【図１１】処理装置の組み合わせやエラー時の代替処理の構築機能に必要なデータ構造とその利用法を説明する概念図である。

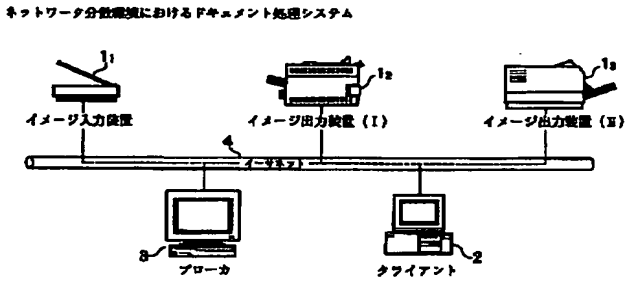
【符号の説明】

１…イメージ入出力装置、　１$_1$…イメージ入力装置、１$_2$　…イメージ出力装置（Ｉ）、　１$_3$…イメージ出力装置（　）、２…クライアント（ＰＣ）、３…ブローカ、４…ネットワーク（イーサネット）、　１０…プロセッサ ＣＰＵ）、１１…ＲＯＭ、１２…ＲＡＭ、１３…ＮＶＲＡＭ、　１４…繰作パネル、１５…パネル制御部、　１６…スキャン／プリント・エンジン、１７…エンジン制御部、　１８…記憶装置、１９…ディスクドライバ、　２０…通信制御部、２１…モデム、　３０…プロセッサ ＣＰＵ）、３１…ＲＯＭ、３２…ＲＡＭ、３３…通信制御部、３４…データベース。

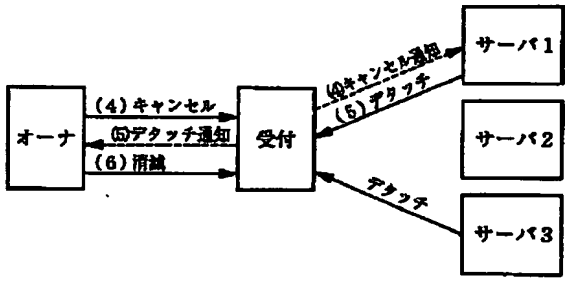
【図１】



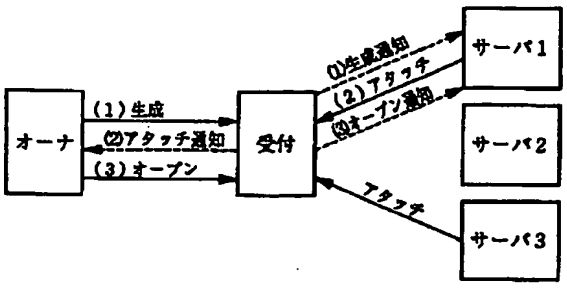
【図３】



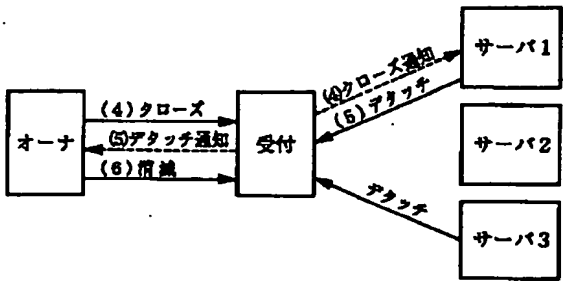
【図７】



【図５】

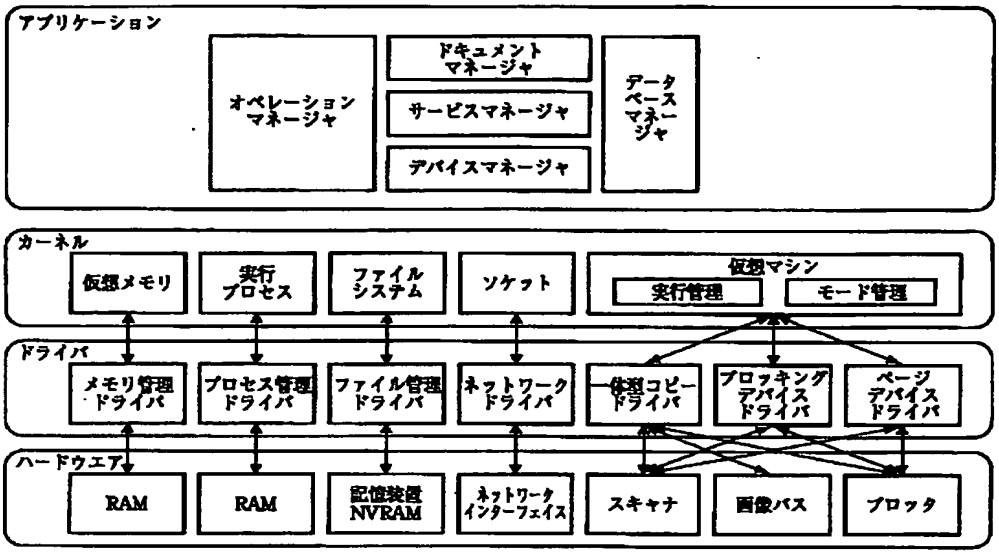


【図６】

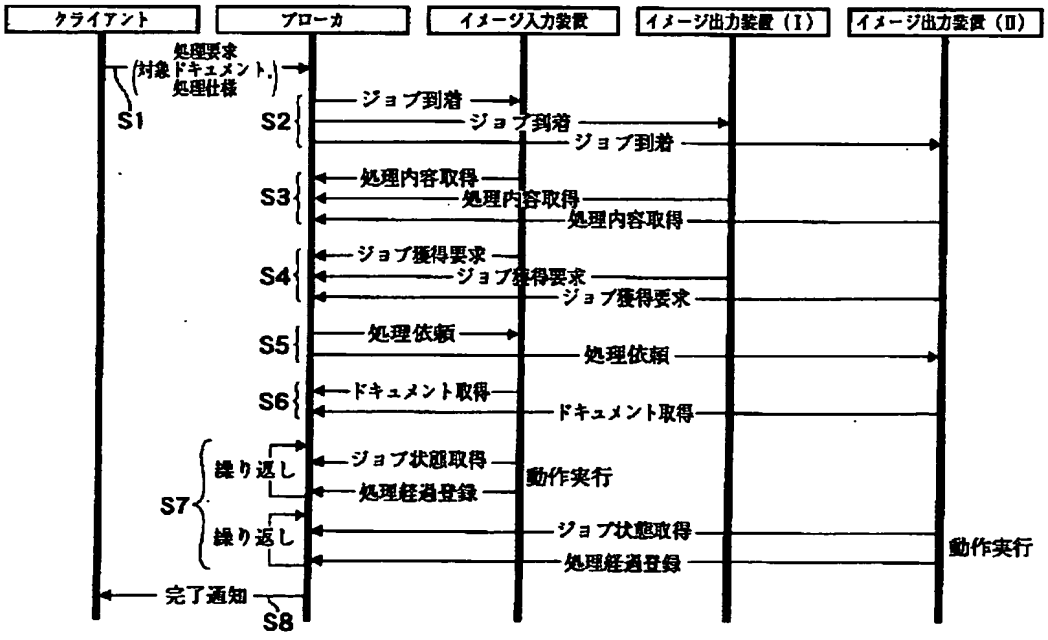


(8)

【図２】



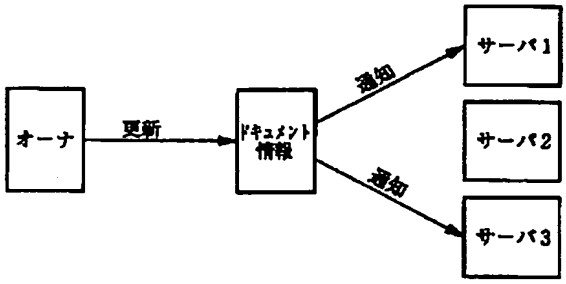
【図４】



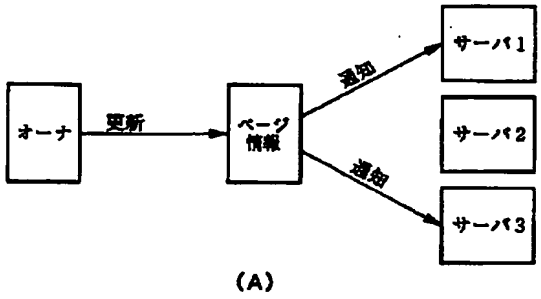
【図１１】

Packetクラス

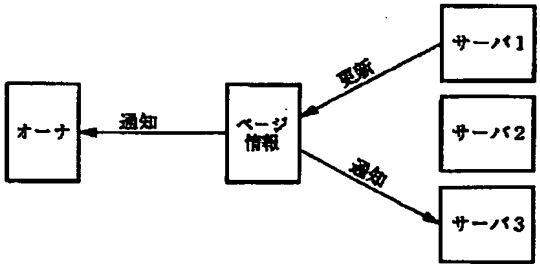
【図８】


オーナ
更新
ドキュメント情報
通知
通知
サーバ1
サーバ2
サーバ3

【図９】

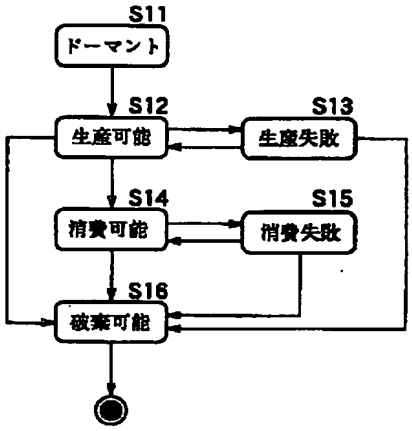

オーナ
更新
ページ情報
通知
通知
サーバ1
サーバ2
サーバ3

(A)


オーナ
通知
ページ情報
更新
通知
サーバ1
サーバ2
サーバ3

(B)

【図１０】


S11
ドーマント
S12
生産可能
S13
生産失敗
S14
消費可能
S15
消費失敗
S16
破棄可能

CLAIMS

[Claim(s)]

[Claim・1] The document handling system characterized by having registered the processing job information on the image data in a system as common information, and making reference possible in the document handling system by which two or more image-data processors which document--ization-process an image data according to processing job information are distributed through the network.

[Claim 2] The document handling system characterized by having the job management means which carries out unitary management of service of the document obtained by registration of the processing job information on the image data in a system, and activation of a processing job, and the advance of job processing on a network in the document handling system by which two or more image-data processors which document--ization-process an image data according to processing job information are distributed through the network.

[Claim 3] Each of two or more of said image-data processors is a document handling system according to claim 1 or 2 characterized by acquiring the processing job of an image data actively.

[Claim 4] Each of two or more of said image-data processors is a document handling system according to claim 2 or 3 characterized by acquiring a processing-object document through a network by on demand one by referring to the processing job information under management of said job management means.

[Claim 5] The document handling system according to claim 2 to 4 which enables the monitor of the processing situation of a series of job units which exist in the middle of processing using the processing job information under management of said job management means, and is characterized by performing job processing when each of two or more of said image-data processors causes a state transition according to a monitor result.

[Claim 6] Said job management means is a document handling system according to claim 2 to 5 characterized by holding two or more of said specifications of operation and error histories of each of an image-data processor as information as management information of a processing job.

[Claim 7] The document handling system according to claim 1 to 6 characterized by said image-data processor consisting of at least one of the image input device which

image-data-izes input, the image-data are recording equipment which saves an image data, and the image printed output image-output units based on an image data.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to this system that was made to carry out unitary management of the activation of a processing job on the network about the document handling system which is equipment which document--ization-processes an image data and by which image output unit **s, such as image input devices, such as a scanner, image-data are recording equipment, and a printer, are distributed through a network.

[0002]

[Description of the Prior Art] Image output units, such as a printer, are connected with host devices, such as a personal computer and a workstation, through a network from the former, and the printer system to which made it make a paper document output exists by performing the job by the printer which received the print job transmitted from a host device. Moreover, the image-data processor with which plurality, such as image output units, such as not only a printer but an image input device, a printer, etc., and image are recording equipment, differs is distributed and arranged on a network, and it is becoming common to build a document handling system in recent years. In these systems, if the case where an image-data processor was used as a printer was made into the example, when a print job is transmitted from a host device (processing demand origin), and the host device side would specify the printer which requests processing and will have grasped the condition of the printer in advance, the approach of transmitting a print job is taken. Therefore, since the printer of capacity which fitted each print job processed most is not necessarily efficiently used when the printer by which capacity differs is connected as a system element, total performance as a printing job-processing system is worsened.

[0003]

[Problem(s) to be Solved by the Invention] This invention is what was made in view of the trouble of document handling systems, such as the above-mentioned conventional printer system. The purpose Even if client equipment does not grasp the condition of

each processor of requesting processing in advance Processing is appropriately performed only by inputting the demand of document ****, and use of each image-data processor, such as a printer distributed on the network according to the contents of the processing job with which it is going to deal, is adjusted. By carrying out coordination actuation, use effectiveness is gathered and it is in building the document handling system which realizes improvement in the total performance as a document handling system.

[0004]

[Means for Solving the Problem] In the document handling system by which two or more image-data processors which document--ization-process an image data according to processing job information are distributed through the network, invention of claim 1 registers the processing job information on the image data in a system as common information, and constitutes the document handling system characterized by making reference possible.

[0005] Invention of claim 2 constitutes the document handling system characterized by having the job management means which carries out unitary management of registration of the processing job of the image data in a system, service of the document by this processing job, and the advance of job processing on a network in the document handling system by which two or more image-data processors which document--ization-process an image data according to processing job information are distributed through the network.

[0006] Invention of claim 3 is characterized by each of two or more of said image-data processors acquiring the processing job of an image data actively (it being a deed about a demand of an image-data processor side to a processing job by referring to the processing job information registered as common information) in a document handling system according to claim 1 or 2.

[0007] Invention of claim 4 is characterized by each of two or more of said image-data processors acquiring a processing-object document through a network by on demand one by referring to the processing job information under management of said job management means in a document handling system according to claim 2 or 3.

[0008] In a document handling system according to claim 2 to 4, invention of claim 5 enables the monitor of the processing situation of a series of job units which exist in the middle of processing using the processing job information under management of said job management means, and when each of two or more of said image-data processors causes a state transition according to a monitor result, it is characterized by performing job processing.

[0009] Invention of claim 6 is characterized by said job management means holding two or more of said specifications of operation and error histories of each of an image-data processor as information as management information of a processing job in a document handling system according to claim 2 to 5.

[0010] Invention of claim 7 is characterized by said image-data processor consisting of at least one of the image input device which image-data-izes input, the image-data are recording equipment which saves an image data, and the image printed output image-output units based on an image data in a document handling system according to claim 1 to 6.

[0011]

[Embodiment of the Invention] The example of the following which shows the document handling system by this invention with an accompanying drawing explains. The hardware configuration of this example is shown in drawing 1 , and that software configuration is shown in drawing 2 R> 2. The system of the example shown in drawing 1 shows a fundamental configuration, and uses image I/O device 1 equipped with a scanner and printer ability, PC (personal computer)2, a broker 3, and a network 4 as a system element. Below, the hardware configuration and function of each system element are explained.

[0012] · Image I/O device image I/O device 1 has a processor (CPU) 10 as what manages control of the whole equipment, and a disk driver 19, the communications control section 20, and a modem 21 are connected with ROM11, RAM12, NVRAM13, the **** panel 14, the panel control section 15, scan/print engine 16 and the engine control section 17, and the store 18 under the control. A program code, a font, and other static data are stored in ROM11 in ROM11, RAM12, and NVRAM13 which were prepared as memory, and RAM12 is used as the temporary memory location, and the data of a non-volatile are stored in NVRAM13. A control panel 14 and the panel control section 15 manage an interface with a user, and contain the display and the input section for the input/output operation by the user. Scan/print engine 16 and the engine control section 17 perform reading of a paper manuscript and printing to a transfer paper as a traffic cop of an image data. In addition, in the system of this invention, although the I/O section is unified as a unit with this equipment, when functioning through a network 4, you may understand that it is the object which works as equipment which performs the input or output processing of an image data independently according to the demand from a client (here PC2). A store 18 and a disk driver 19 store a lot of data, such as an image data, or offer the memory location of a database, and they are used in order to take data in and out there. It connects with networks, such as Ethernet, and the

communications control section 20 enables the communication link with an external device. the pier according to a parallel interface, a serial interface, etc. here -- a tow -- a pier's topology is also made possible. It connects with a public line and a modem 21 enables the communication link with an external device.

[0013] - It is the middleware which contracts in the duty which a broker broker 3 maintains management information, such as functional information required for image I/O device 1 connected to the network 4, and job management, as share information, performs the job management which carries out unitary management of offer of services, such as a document obtained by registration of the processing job of the image data in a system, and this processing job, and the advance of job processing on a network, and establishes connection of a client (PC2) and a server (here image I/O device 1). The broker 3 is equipped with CPU30, ROM31, RAM32, the communications control section 33, and a database 34, and may exist in whichever of PC2 or image I/O device 1.

[0014] The software configuration in connection with above-mentioned image I/O device 1 and its work are explained below. Drawing 2 shows the structure of the inclusion software inside equipment. As shown in drawing 2 , if this software configuration is roughly divided, it will become low order from the structure, the application layer, a kernel layer, a driver layer, and a hardware layer, of four layers from a high order. The application layer is a layer which forms applications, such as a copy fax printer. The document manager in a layer is the application which handles a document in accordance with the scenario of a copy fax printer etc., and is functional block which takes the lead as application. A service manager is functional block which is needed in common in the case of document handling, and performs management and activation of various services. A device manager is functional block which opts for actuation of physical devices, such as a scanner plotter and an image bus, and performs management and activation of various devices. An operation manager controls the control panel attached to equipment, and performs the notice of no tee fire RATO of the display and carbon button operation of a carbon button etc. A database manager performs the maintenance of permanent data, such as use hysteresis, account data, etc. of a font, fixed form form fax receiving hysteresis, and equipment.

[0015] A kernel layer is usually incorporated as a kernel of OS, various devices are abstracted, service is offered to application, and the application layer operates by carrying out a system call to a kernel layer. A driver layer is an assembly of functional block which performs control for driving various hardware. A hardware layer is the set of the controllable resource which exists in equipment.

[0016] Next, the function of either an image input or an image output is given to

independent equipment as an image-data processor on the basis of the above-mentioned system, and the example of the system distributed on the network is shown. Drawing 3 shows the system configuration of this example, and drawing 4 shows one example of actuation of the system of drawing 3 by the interaction between each system element. The structure of a system and actuation of this example are explained based on drawing 3 and drawing 4 . a system configuration -- drawing 3 -- being shown -- as -- an image data -- a processor -- ****** -- an image -- an input device -- 11 -- an image -- an output unit -- (-- I --) -- 12 -- an image -- an output unit -- (-- II --) -- 13 -- distributing -- making -- a broker 3 and a client (PC) 2 -- a network 4 (Ethernet consists of this example) top -- arranging .

[0017] if a user inputs a processing specification as assignment of the object document which performs document handling from a client PC 2 (or image input unit 11) and a processing demand is carried out to a broker 3, a processing specification will be registered into a broker 3 as a document **** job with an object document (S1 (refer to drawing 4 and the following -- the same)). A broker 3 notifies that the document actuation job arrived from the client 2 to the image input device 11 in a system, the image output unit (I) 12, and image output unit (II)13 grade (S2).

[0018] each processor (an image -- an input device -- 11 -- an image -- an output unit -- (-- I --) -- 12 -- an image -- an output unit -- (-- II --) -- 13 -- an image -- are recording -- equipment) acquires the contents of processing of a document actuation job in response to this notice (S3). In each processor, it judges whether the contents of processing of the actuation job acquired in the light of the throughput which each has can be processed, and when it can process, influence for acquiring a job from the (S4 [which notifies a job acquisition demand to a broker 3]), i.e., processor, side actively is carried out.

[0019] At a broker 3, supposing there is a job acquisition demand from two or more processors, by the broker 3, he will examine these job acquisition demands of two or more, and a processing request will be notified to a suitable processor (S5). According to the example of drawing 4 , the processing request is notified to the image input device 11 and the image output unit (II) 13. In this case, the requested contents of processing are setup of the image input device 11 generating others in an image, and outputting it as a paper document with the image output unit (II) 13 based on the generated image data. The processor from which processing was requested acquires the document of a processing object from a broker 3 (S6). In the above mentioned setup, the image input device 11 acquires the assignment information on an object document, and acquires the image data (electronic document) which the image input device 11 processes the image output unit (II) 13, and is outputted as a processing-object document. Each processor

which obtained the processing-object document processes according to the contents of processing. Moreover, the processing progress is registered into a broker 3 as a document actuation job (S7). Henceforth, a processor advances actuation, supervising and reforming a document actuation job (S7). As a result, each processor will cooperate and a document actuation job will be performed. In the example of a setting, the image input device 11 and the image output unit (II) 13 can advance processing in cooperation, for example, looking at the processing progress for every page. After ending activation of a job, a broker 3 sends the notice of completion to a client (S8).

[0020] Actuation of the above-mentioned system is explained more to a detail from the point of network formation. In this system, an owner (the example described above demand processing origin a client PC 2 or the image input unit 11) is generating and opening a document, and is recognized as a document configurator and a monitor. That is, an owner has responsibility in generation, disappearance, and opening and closing of a share document. Moreover, a server (each image-data processor) specifies a document to supervise, is attaching and is recognized as a monitor. That is, at the time of document formation, a server attaches in response to the notice of generation of the document from a broker 3, and performs DETATCHI in response to the notice of closing or the notice of cancellation of a document at the time of discharge. According to the above-mentioned principle, an owner, the network formed in the case of the communication link which a server performs through a broker, and its formation procedure are explained below.

[0021] - Formation procedure drawing 5 of a communication network is drawing explaining the formation procedure of a communication network. The formation procedure of a communication network consists of (1) generation -> (2) attaching -> (3) opening and those response procedures of a document, and the number in drawing 5 is attached in order to show the procedure. As shown in drawing 5 , an owner generates a document, makes it a document actuation job, and it notifies to a processor, and the processor which supervises a document actuation job gets to know it, and attaches. An owner opens the generated document and the server as which the broker chose as the server which carries out a processing request in the format of the notice of opening, and was chosen according to the processing request performs processing.

[0022] - Discharge procedure drawing 6 of a communication network is drawing explaining the discharge procedure of the communication network by closing. The discharge procedure of a communication network performs a procedure contrary to formation of a communication network. namely, a discharge procedure -- (4) closing ->(5) DETATCHI -> (6) of a document -- it disappears, and is come out and constituted. In

addition, the number in drawing 6 is attached in order to show the procedure. If formation and discharge of a communication network are made to contrast (1) generation and notice of generation -> (6) disappearances (2) attaching and notice of attaching -> (5) DETATCHI and notice of DETATCHI (3) opening and notice of opening -> It becomes (4) closing and the notice of closing.

[0023] Drawing 7 is drawing explaining the discharge procedure of the communication network by cancellation. In addition, the number in drawing 7 is attached in order to show the procedure. As a discharge factor of a communication network, there is cancellation other than the above-mentioned closing. Both are transmitted from an owner. It is the post process to which cancellation makes processing of a share document invalid to closing being a post process when a share document is processed normally. As the discharge procedure of the communication network by cancellation is the same as that of the case (drawing 6) of closing and it is shown in drawing 7 , the notice of closing only changes to the notice of cancellation. However, an owner and a server must direct (5) DETATCHI and (6) disappearances, after making the condition of a share page into a predetermined condition, in response to the fact that it was canceled.

[0024] - Renewal of document information and notice procedure drawing 8 are drawings explaining updating and the notice procedure of document information. The renewal of a document is a processing job in which only an owner is possible. Updating of a document notifies all the servers to which it attaches, i.e., the event updated by the server 1 which has attached in the example of illustration, and the server 3. Notice information is the event (event class) in which it was updated.

[0025] - Renewal of **-JI information and notice procedure drawing 9 are drawings explaining updating and the notice procedure of page information. Page information is updated from an owner and a server. (A) of drawing 9 shows the former example, and (B) of this drawing shows the latter example. All monitors also including the owner except the regenerator itself are notified of the event in which it was updated (at the server 1 which has attached in the example of (A) of illustration, a server 3, and the example of (B) of illustration, they are an owner and a server 3). That is, it is notified to owners other than an updating agency, and all attaching servers. Notice information is in the condition (State class) of the page accompanying updating.

[0026] As actuation of a system, since each processor registers the processing progress into a broker 3 as a document actuation job, it cooperates, while two or more processors supervise and reform a document actuation job mutually, and it becomes possible to perform a series of document **** jobs. In that case, how to use is explained below. If actuation of making a paper document output with the image output unit (II) 13 based

on the image data which it is generated with the image input device 11 illustrated above, and is outputted is again made into an example, it will become possible to carry out this processing with the algorithm which performs the page state transition shown in drawing 10 , for example. The state-transition algorithm of this page tends to manage advance of the page job in the image input device 11 and the image output unit (II) 13 unitary by grasping transition of a job condition to that job condition of the page unit of the image input device 11 registered into a broker 3 as share information, and the image output unit (II) 13.

[0027] A state transition begins from the condition (S11) in which the activation of a job received from the client 2 was dormant first in drawing 10 . The image input unit 11 which requested processing of the document which the broker 3 received makes a condition shift to a producible condition (S12) by getting to know having acquired the document from this condition. That is, it sets in the condition S1 and is the image input unit 11. It is shown that document handling is performed. then, the page data which this job was performed with the image input device 11 (production), and termination of that job was told for every page, and were processed -- consumption -- being possible (S14) -- it is shown as a becoming state transition. Using the page data processed and created with the image input device 11, it image-outputs, for example, the image output unit (II) 13 which got to know the change of state prints out (consumption), and by ending a job shows as a state transition that abandonment of the page data was attained (S16). In addition, it may be discarded not only in when a job is normally performed according to a state transition which was described above, and when a jam etc. is generated in the image input device 11 or the image output unit (II) 13 and production or consumption goes wrong, respectively (S13, S15), activation of a job is canceled, and it is the case where a job is stopped, and even if it attaches in this case, it shows this as a state transition. Thus, in a broker 3, the transition state of a job is managed as common information for every page, using this information, a client 2 can supervise the activation situation of processing and each server can know the activation timing of the given processing.

[0028] Moreover, in a broker 3, as share information, the specification of operation and error history of a processor are held as information in addition to the situation of a job of operation, the processor according to the functional offer method and demand by defining those combination in consideration of the capacity of a processor assigns, alternative processing at the time of an error is set up, and network construction is enabled further. Moreover, the mismatching of actuation between the client equipment and server equipment when corresponding to a new specification, or server equipment

is abolished by carrying out capacity exchange of the method. That is, reconstruction of the network environment by version up is made unnecessary. Drawing 11 is a conceptual diagram for explaining DS required for the above-mentioned function, and its directions. As drawing 11 is shown, the data of a specification (Spec1, Spec2) of operation and error information (Err-1) are held as a packet class. The specification of operation and error data which were prepared for the packet class are packed, a packet object which unpacks is made into share information, and get() and set() define the method. Moreover, specification information and error information become possible [operating, also when upgraded] by exchanging the activation object which offers a method.

[0029]

[Effect of the Invention] According to invention of claim 1, the user of a document handling system Without being conscious of specific equipment (it not being necessary to specify specific equipment like before) Since it becomes possible to be able to supply a document handling demand, for the capacity of individual-processing equipment not to become a bottleneck on the occasion of activation of the demanded document handling, to make equipment selectable, and to choose the optimal equipment, Each equipment operates efficiently and makes possible total performance improvement as a document handling system.

[0030] Even if a user does not grasp all the conditions of each processor in advance according to invention of claim 2 That what is necessary is just to input the demand of document **** (generation of a paper document to an electronic document, transfer of electronic documents, and generation of an electronic document to a paper document) Since demanded document actuation is performed by choosing the optimal equipment with the management tool which carries out unitary management of the job, each equipment operates efficiently and the total performance improvement as a document handling system of it becomes possible.

[0031] In order that only the processor which can operate may go [according to invention of claim 3] a job to gain in addition to the effect of the invention of claims 1 and 2, It is avoidable that processing becomes impossible to the case (a jam, maintenance, etc.) which the equipment specified like before is stopping. Moreover, equipment can be further made selectable, the optimal equipment can be chosen from the volitional equipment of job acquisition, and the total performance as a system can be raised further.

[0032] In order to acquire a processing-object document through a network by on demand one by referring to the processing job information that unitary management of

each processor was carried out in addition to the effect of the invention of claims 2 and 3 according to invention of claim 4, the traffic of image data can be reduced.

[0033] According to invention of claim 5, it becomes possible to supervise finely the activation situation of document actuation of a series of job units which exist in the middle of processing in addition to claim 2 thru/or the effect of the invention of 4, and the state transition is grasped from the progress situation of a page unit, and the progress situation as a document, and activation of job processing is attained.

[0034] According to invention of claim 6, it adds to claim 2 thru/or the effect of the invention of 5. As share information The specification of operation and error history of a processor are held as information in addition to the situation of a job of operation. The processor according to the functional offer method and demand by defining those combination in consideration of the capacity of a processor assigns. Further Alternative processing at the time of an error is set up, and network construction (combination [equipment / as scanner equipment or the output unit as an input unit / printer] is defined, and the decision of the evasion equipment at the time of an error etc. is built) is enabled. Moreover, the mismatching of actuation between the client equipment and server equipment when corresponding to a new specification, or server equipment is abolished by carrying out capacity exchange of the method. That is, reconstruction of the network environment by version up is made unnecessary.

[0035] According to invention of claim 7, it embodies by the image input device (an electronic document is generated from a paper document) which image-data-izes input, the image-data are recording equipment (transfer of electronic documents) which saves an image data, and the document handling system using the image printed output image-output unit (a paper document is generated from an electronic document) based on an image data as an image-data processor which constitutes a document handling system for claim 1 thru/or the effect of the invention of 6.

TECHNICAL FIELD

[Field of the Invention] This invention relates to this system that was made to carry out unitary management of the activation of a processing job on the network about the document handling system which is equipment which document--ization-processes an image data and by which image output unit **s, such as image input devices, such as a scanner, image-data are recording equipment, and a printer, are distributed through a network.

PRIOR ART

[Description of the Prior Art] Image output units, such as a printer, are connected with host devices, such as a personal computer and a workstation, through a network from the former, and the printer system to which made it make a paper document output exists by performing the job by the printer which received the print job transmitted from a host device. Moreover, the image-data processor with which plurality, such as image output units, such as not only a printer but an image input device, a printer, etc., and image are recording equipment, differs is distributed and arranged on a network, and it is becoming common to build a document handling system in recent years. In these systems, if the case where an image-data processor was used as a printer was made into the example, when a print job is transmitted from a host device (processing demand origin), and the host device side would specify the printer which requests processing and will have grasped the condition of the printer in advance, the approach of transmitting a print job is taken. Therefore, since the printer of capacity which fitted each print job processed most is not necessarily efficiently used when the printer by which capacity differs is connected as a system element, total performance as a printing job-processing system is worsened.

EFFECT OF THE INVENTION

[Effect of the Invention] According to invention of claim 1, the user of a document handling system Without being conscious of specific equipment (it not being necessary to specify specific equipment like before) Since it becomes possible to be able to supply a document handling demand, for the capacity of individual-processing equipment not to become a bottleneck on the occasion of activation of the demanded document handling, to make equipment selectable, and to choose the optimal equipment, Each equipment operates efficiently and makes possible total performance improvement as a document handling system.

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[0031] In order that only the processor which can operate may go [according to invention of claim 3] a job to gain in addition to the effect of the invention of claims 1 and 2, It is avoidable that processing becomes impossible to the case (a jam, maintenance, etc.) which the equipment specified like before is stopping. Moreover, equipment can be further made selectable, the optimal equipment can be chosen from the volitional equipment of job acquisition, and the total performance as a system can be raised further.

[0032] In order to acquire a processing-object document through a network by on demand one by referring to the processing job information that unitary management of each processor was carried out in addition to the effect of the invention of claims 2 and 3 according to invention of claim 4, the traffic of image data can be reduced.

[0033] According to invention of claim 5, it becomes possible to supervise finely the activation situation of document actuation of a series of job units which exist in the middle of processing in addition to claim 2 thru/or the effect of the invention of 4, and the state transition is grasped from the progress situation of a page unit, and the progress situation as a document, and activation of job processing is attained.

[0034] According to invention of claim 6, it adds to claim 2 thru/or the effect of the invention of 5. As share information The specification of operation and error history of a processor are held as information in addition to the situation of a job of operation. The processor according to the functional offer method and demand by defining those combination in consideration of the capacity of a processor assigns. Further Alternative processing at the time of an error is set up, and network construction (combination [equipment / as scanner equipment or the output unit as an input unit / printer] is defined, and the decision of the evasion equipment at the time of an error etc. is built) is enabled. Moreover, the mismatching of actuation between the client equipment and server equipment when corresponding to a new specification, or server equipment is abolished by carrying out capacity exchange of the method. That is, reconstruction of the network environment by version up is made unnecessary.

[0035] According to invention of claim 7, it embodies by the image input device (an electronic document is generated from a paper document) which image-data-izes input,

the image-data are recording equipment (transfer of electronic documents) which saves an image data, and the document handling system using the image printed output image-output unit (a paper document is generated from an electronic document) based on an image data as an image-data processor which constitutes a document handling system for claim 1 thru/or the effect of the invention of 6.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] This invention is what was made in view of the trouble of document handling systems, such as the above-mentioned conventional printer system. The purpose Even if client equipment does not grasp the condition of each processor of requesting processing in advance Processing is appropriately performed only by inputting the demand of document ****, and use of each image-data processor, such as a printer distributed on the network according to the contents of the processing job with which it is going to deal, is adjusted. By carrying out coordination actuation, use effectiveness is gathered and it is in building the document handling system which realizes improvement in the total performance as a document handling system.

MEANS

[Means for Solving the Problem] In the document handling system by which two or more image-data processors which document--ization-process an image data according to processing job information are distributed through the network, invention of claim 1 registers the processing job information on the image data in a system as common information, and constitutes the document handling system characterized by making reference possible.

[0005] Invention of claim 2 constitutes the document handling system characterized by having the job management means which carries out unitary management of registration of the processing job of the image data in a system, service of the document by this processing job, and the advance of job processing on a network in the document handling system by which two or more image-data processors which

document--ization-process an image data according to processing job information are distributed through the network.

[0006] Invention of claim 3 is characterized by each of two or more of said image-data processors acquiring the processing job of an image data actively (it being a deed about a demand of an image-data processor side to a processing job by referring to the processing job information registered as common information) in a document handling system according to claim 1 or 2.

[0007] Invention of claim 4 is characterized by each of two or more of said image-data processors acquiring a processing-object document through a network by on demand one by referring to the processing job information under management of said job management means in a document handling system according to claim 2 or 3.

[0008] In a document handling system according to claim 2 to 4, invention of claim 5 enables the monitor of the processing situation of a series of job units which exist in the middle of processing using the processing job information under management of said job management means, and when each of two or more of said image-data processors causes a state transition according to a monitor result, it is characterized by performing job processing.

[0009] Invention of claim 6 is characterized by said job management means holding two or more of said specifications of operation and error histories of each of an image-data processor as information as management information of a processing job in a document handling system according to claim 2 to 5.

[0010] Invention of claim 7 is characterized by said image-data processor consisting of at least one of the image input device which image-data-izes input, the image-data are recording equipment which saves an image data, and the image printed output image-output units based on an image data in a document handling system according to claim 1 to 6.

[0011]

[Embodiment of the Invention] The example of the following which shows the document handling system by this invention with an accompanying drawing explains. The hardware configuration of this example is shown in drawing 1 , and that software configuration is shown in drawing 2 R> 2. The system of the example shown in drawing 1 shows a fundamental configuration, and uses image I/O device 1 equipped with a scanner and printer ability, PC (personal computer)2, a broker 3, and a network 4 as a system element. Below, the hardware configuration and function of each system element are explained.

[0012] · Image I/O device image I/O device 1 has a processor (CPU) 10 as what manages

control of the whole equipment, and a disk driver 19, the communications control section 20, and a modem 21 are connected with ROM11, RAM12, NVRAM13, the **** panel 14, the panel control section 15, scan/print engine 16 and the engine control section 17, and the store 18 under the control. A program code, a font, and other static data are stored in ROM11 in ROM11, RAM12, and NVRAM13 which were prepared as memory, and RAM12 is used as the temporary memory location, and the data of a non-volatile are stored in NVRAM13. A control panel 14 and the panel control section 15 manage an interface with a user, and contain the display and the input section for the input/output operation by the user. Scan/print engine 16 and the engine control section 17 perform reading of a paper manuscript and printing to a transfer paper as a traffic cop of an image data. In addition, in the system of this invention, although the I/O section is unified as a unit with this equipment, when functioning through a network 4, you may understand that it is the object which works as equipment which performs the input or output processing of an image data independently according to the demand from a client (here PC2). A store 18 and a disk driver 19 store a lot of data, such as an image data, or offer the memory location of a database, and they are used in order to take data in and out there. It connects with networks, such as Ethernet, and the communications control section 20 enables the communication link with an external device. the pier according to a parallel interface, a serial interface, etc. here -- a tow -- a pier's topology is also made possible. It connects with a public line and a modem 21 enables the communication link with an external device.

[0013] - It is the middleware which contracts in the duty which a broker broker 3 maintains management information, such as functional information required for image I/O device 1 connected to the network 4, and job management, as share information, performs the job management which carries out unitary management of offer of services, such as a document obtained by registration of the processing job of the image data in a system, and this processing job, and the advance of job processing on a network, and establishes connection of a client (PC2) and a server (here image I/O device 1). The broker 3 is equipped with CPU30, ROM31, RAM32, the communications control section 33, and a database 34, and may exist in whichever of PC2 or image I/O device 1.

[0014] The software configuration in connection with above-mentioned image I/O device 1 and its work are explained below. Drawing 2 shows the structure of the inclusion software inside equipment. As shown in drawing 2 , if this software configuration is roughly divided, it will become low order from the structure, the application layer, a kernel layer, a driver layer, and a hardware layer, of four layers from a high order. The application layer is a layer which forms applications, such as a copy fax printer. The

document manager in a layer is the application which handles a document in accordance with the scenario of a copy fax printer etc., and is functional block which takes the lead as application. A service manager is functional block which is needed in common in the case of document handling, and performs management and activation of various services. A device manager is functional block which opts for actuation of physical devices, such as a scanner plotter and an image bus, and performs management and activation of various devices. An operation manager controls the control panel attached to equipment, and performs the notice of no tee fire RATO of the display and carbon button operation of a carbon button etc. A database manager performs the maintenance of permanent data, such as use hysteresis, account data, etc. of a font, fixed form form fax receiving hysteresis, and equipment.

[0015] A kernel layer is usually incorporated as a kernel of OS, various devices are abstracted, service is offered to application, and the application layer operates by carrying out a system call to a kernel layer. A driver layer is an assembly of functional block which performs control for driving various hardware. A hardware layer is the set of the controllable resource which exists in equipment.

[0016] Next, the function of either an image input or an image output is given to independent equipment as an image-data processor on the basis of the above-mentioned system, and the example of the system distributed on the network is shown. Drawing 3 shows the system configuration of this example, and drawing 4 shows one example of actuation of the system of drawing 3 by the interaction between each system element. The structure of a system and actuation of this example are explained based on drawing 3 and drawing 4 . a system configuration -- drawing 3 -- being shown -- as -- an image data -- a processor -- ****** -- an image -- an input device -- 11 -- an image -- an output unit -- (-- I --) -- 12 -- an image -- an output unit -- (-- II --) -- 13 -- distributing -- making -- a broker 3 and a client (PC) 2 -- a network 4 (Ethernet consists of this example) top -- arranging .

[0017] if a user inputs a processing specification as assignment of the object document which performs document handling from a client PC 2 (or image input unit 11) and a processing demand is carried out to a broker 3, a processing specification will be registered into a broker 3 as a document **** job with an object document (S1 (refer to drawing 4 and the following -- the same)). A broker 3 notifies that the document actuation job arrived from the client 2 to the image input device 11 in a system, the image output unit (I) 12, and image output unit (II)13 grade (S2).

[0018] each processor (an image -- an input device -- 11 -- an image -- an output unit -- (-- I --) -- 12 -- an image -- an output unit -- (-- II --) -- 13 -- an image -- are recording --

equipment) acquires the contents of processing of a document actuation job in response to this notice (S3). In each processor, it judges whether the contents of processing of the actuation job acquired in the light of the throughput which each has can be processed, and when it can process, influence for acquiring a job from the (S4 [which notifies a job acquisition demand to a broker 3]), i.e., processor, side actively is carried out.

[0019] At a broker 3, supposing there is a job acquisition demand from two or more processors, by the broker 3, he will examine these job acquisition demands of two or more, and a processing request will be notified to a suitable processor (S5). According to the example of drawing 4 , the processing request is notified to the image input device 11 and the image output unit (II) 13. In this case, the requested contents of processing are setup of the image input device 11 generating others in an image, and outputting it as a paper document with the image output unit (II) 13 based on the generated image data. The processor from which processing was requested acquires the document of a processing object from a broker 3 (S6). In the above mentioned setup, the image input device 11 acquires the assignment information on an object document, and acquires the image data (electronic document) which the image input device 11 processes the image output unit (II) 13, and is outputted as a processing-object document. Each processor which obtained the processing-object document processes according to the contents of processing. Moreover, the processing progress is registered into a broker 3 as a document actuation job (S7). Henceforth, a processor advances actuation, supervising and reforming a document actuation job (S7). As a result, each processor will cooperate and a document actuation job will be performed. In the example of a setting, the image input device 11 and the image output unit (II) 13 can advance processing in cooperation, for example, looking at the processing progress for every page. After ending activation of a job, a broker 3 sends the notice of completion to a client (S8).

[0020] Actuation of the above-mentioned system is explained more to a detail from the point of network formation. In this system, an owner (the example described above demand processing origin a client PC 2 or the image input unit 11) is generating and opening a document, and is recognized as a document configurator and a monitor. That is, an owner has responsibility in generation, disappearance, and opening and closing of a share document. Moreover, a server (each image-data processor) specifies a document to supervise, is attaching and is recognized as a monitor. That is, at the time of document formation, a server attaches in response to the notice of generation of the document from a broker 3, and performs DETATCHI in response to the notice of closing or the notice of cancellation of a document at the time of discharge. According to the above-mentioned principle, an owner, the network formed in the case of the

communication link which a server performs through a broker, and its formation procedure are explained below.

[0021] - Formation procedure drawing 5 of a communication network is drawing explaining the formation procedure of a communication network. The formation procedure of a communication network consists of (1) generation -> (2) attaching -> (3) opening and those response procedures of a document, and the number in drawing 5 is attached in order to show the procedure. As shown in drawing 5 , an owner generates a document, makes it a document actuation job, and it notifies to a processor, and the processor which supervises a document actuation job gets to know it, and attaches. An owner opens the generated document and the server as which the broker chose as the server which carries out a processing request in the format of the notice of opening, and was chosen according to the processing request performs processing.

[0022] - Discharge procedure drawing 6 of a communication network is drawing explaining the discharge procedure of the communication network by closing. The discharge procedure of a communication network performs a procedure contrary to formation of a communication network. namely, a discharge procedure -- (4) closing ->(5) DETATCHI -> (6) of a document -- it disappears, and is come out and constituted. In addition, the number in drawing 6 is attached in order to show the procedure. If formation and discharge of a communication network are made to contrast (1) generation and notice of generation -> (6) disappearances (2) attaching and notice of attaching -> (5) DETATCHI and notice of DETATCHI (3) opening and notice of opening -> It becomes (4) closing and the notice of closing.

[0023] Drawing 7 is drawing explaining the discharge procedure of the communication network by cancellation. In addition, the number in drawing 7 is attached in order to show the procedure. As a discharge factor of a communication network, there is cancellation other than the above-mentioned closing. Both are transmitted from an owner. It is the post process to which cancellation makes processing of a share document invalid to closing being a post process when a share document is processed normally. As the discharge procedure of the communication network by cancellation is the same as that of the case (drawing 6) of closing and it is shown in drawing 7 , the notice of closing only changes to the notice of cancellation. However, an owner and a server must direct (5) DETATCHI and (6) disappearances, after making the condition of a share page into a predetermined condition, in response to the fact that it was canceled.

[0024] - Renewal of document information and notice procedure drawing 8 are drawings explaining updating and the notice procedure of document information. The renewal of a document is a processing job in which only an owner is possible. Updating of a

document notifies all the servers to which it attaches, i.e., the event updated by the server 1 which has attached in the example of illustration, and the server 3. Notice information is the event (event class) in which it was updated.

[0025] · Renewal of **-JI information and notice procedure drawing 9 are drawings explaining updating and the notice procedure of page information. Page information is updated from an owner and a server. (A) of drawing 9 shows the former example, and (B) of this drawing shows the latter example. All monitors also including the owner except the regenerator itself are notified of the event in which it was updated (at the server 1 which has attached in the example of (A) of illustration, a server 3, and the example of (B) of illustration, they are an owner and a server 3). That is, it is notified to owners other than an updating agency, and all attaching servers. Notice information is in the condition (State class) of the page accompanying updating.

[0026] As actuation of a system, since each processor registers the processing progress into a broker 3 as a document actuation job, it cooperates, while two or more processors supervise and reform a document actuation job mutually, and it becomes possible to perform a series of document **** jobs. In that case, how to use is explained below. If actuation of making a paper document output with the image output unit (II) 13 based on the image data which it is generated with the image input device 11 illustrated above, and is outputted is again made into an example, it will become possible to carry out this processing with the algorithm which performs the page state transition shown in drawing 10 , for example. The state-transition algorithm of this page tends to manage advance of the page job in the image input device 11 and the image output unit (II) 13 unitary by grasping transition of a job condition to that job condition of the page unit of the image input device 11 registered into a broker 3 as share information, and the image output unit (II) 13.

[0027] A state transition begins from the condition (S11) in which the activation of a job received from the client 2 was dormant first in drawing 10 . The image input unit 11 which requested processing of the document which the broker 3 received makes a condition shift to a producible condition (S12) by getting to know having acquired the document from this condition. That is, it sets in the condition S1 and is the image input unit 11. It is shown that document handling is performed. then, the page data which this job was performed with the image input device 11 (production), and termination of that job was told for every page, and were processed -- consumption -- being possible (S14) -- it is shown as a becoming state transition. Using the page data processed and created with the image input device 11, it image-outputs, for example, the image output unit (II) 13 which got to know the change of state prints out (consumption), and by

ending a job shows as a state transition that abandonment of the page data was attained (S16). In addition, it may be discarded not only in when a job is normally performed according to a state transition which was described above, and when a jam etc. is generated in the image input device 11 or the image output unit (II) 13 and production or consumption goes wrong, respectively (S13, S15), activation of a job is canceled, and it is the case where a job is stopped, and even if it attaches in this case, it shows this as a state transition. Thus, in a broker 3, the transition state of a job is managed as common information for every page, using this information, a client 2 can supervise the activation situation of processing and each server can know the activation timing of the given processing.

[0028] Moreover, in a broker 3, as share information, the specification of operation and error history of a processor are held as information in addition to the situation of a job of operation, the processor according to the functional offer method and demand by defining those combination in consideration of the capacity of a processor assigns, alternative processing at the time of an error is set up, and network construction is enabled further. Moreover, the mismatching of actuation between the client equipment and server equipment when corresponding to a new specification, or server equipment is abolished by carrying out capacity exchange of the method. That is, reconstruction of the network environment by version up is made unnecessary. Drawing 11 is a conceptual diagram for explaining DS required for the above-mentioned function, and its directions. As drawing 11 is shown, the data of a specification (Spec1, Spec2) of operation and error information (Err-1) are held as a packet class. The specification of operation and error data which were prepared for the packet class are packed, a packet object which unpacks is made into share information, and get() and set() define the method. Moreover, specification information and error information become possible [operating, also when upgraded] by exchanging the activation object which offers a method.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The hardware configuration of the example of the document handling system by this invention is shown.

[Drawing 2] The software configuration of the example of the document handling

system by this invention is shown.

[Drawing 3] The system configuration of the example of the document handling system by this invention is shown.

[Drawing 4] The interaction between each system element shows one example of actuation of the system of drawing 3 .

[Drawing 5] It is drawing explaining the formation procedure of a communication network.

[Drawing 6] It is drawing explaining the discharge procedure of the communication network by closing.

[Drawing 7] It is drawing explaining the discharge procedure of the communication network by cancellation.

[Drawing 8] It is drawing explaining updating and the notice procedure of document information.

[Drawing 9] It is drawing explaining updating and the notice procedure of page information.

[Drawing 10] It is the state transition diagram of the page processing job managed as share information.

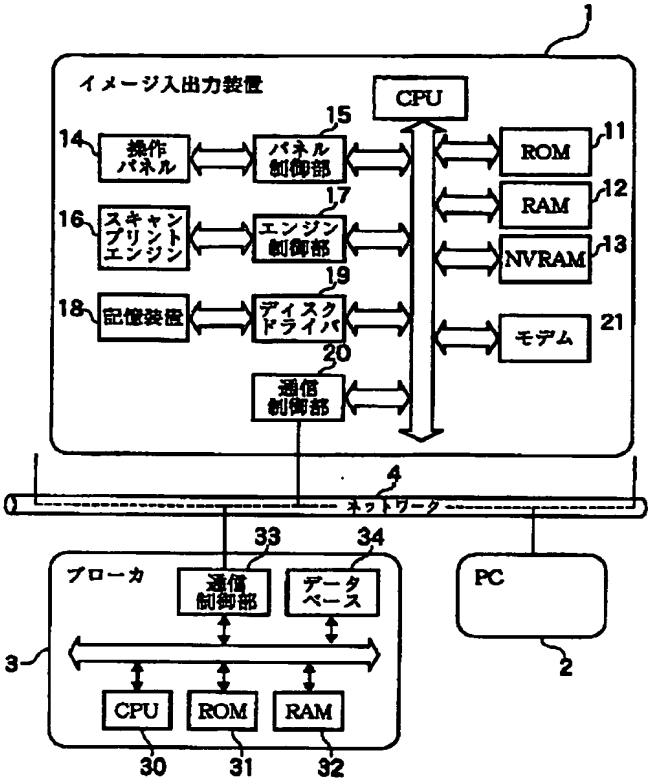
[Drawing 11] It is a conceptual diagram explaining DS required for the construction function of the alternative processing at the time of the combination of a processor, or an error, and its directions.

[Description of Notations]

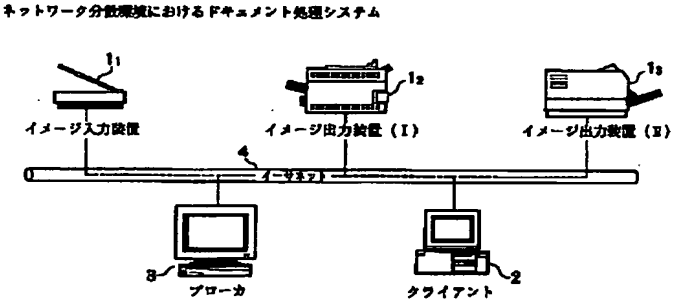
1 -- Image I/O device, 11 -- An image input device, 12 -- Image output unit (I), 13 -- An image output unit (II), 2 -- Client (PC), 3 [-- ROM,] -- A broker, 4 -- A network (Ethernet) and 10 -- A processor (CPU), 11 12 -- RAM, 13 -- NVRAM, 14 -- A **** panel, 15 -- Panel control section, 16 -- Scan/print engine, 17 -- Engine control section, 18 -- A store, 19 -- Disk driver, 20 -- The communications control section, 21 -- Modem 30 [32 / 34 -- Database. / -- RAM, 33 -- Communications control section] -- A processor (CPU), 31 -- ROM

DRAWINGS

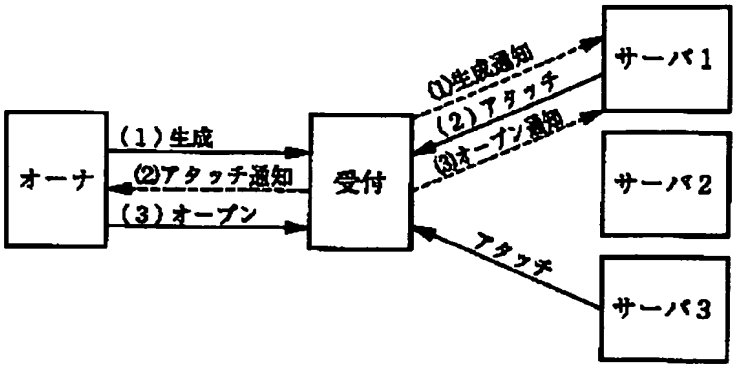
[Drawing 1]



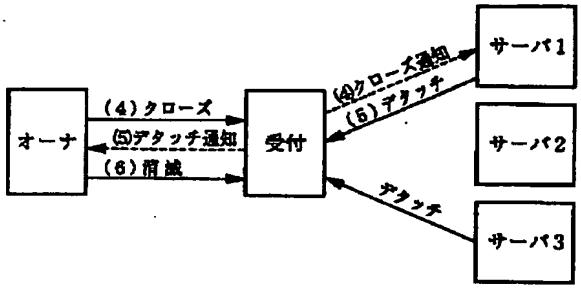
[Drawing 3]



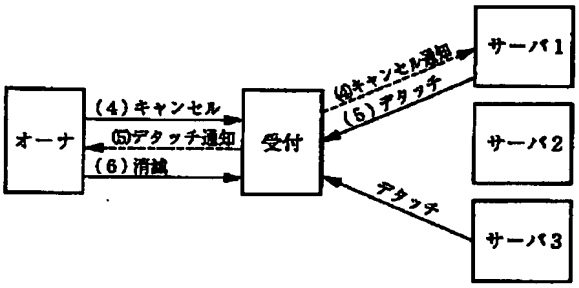
[Drawing 5]



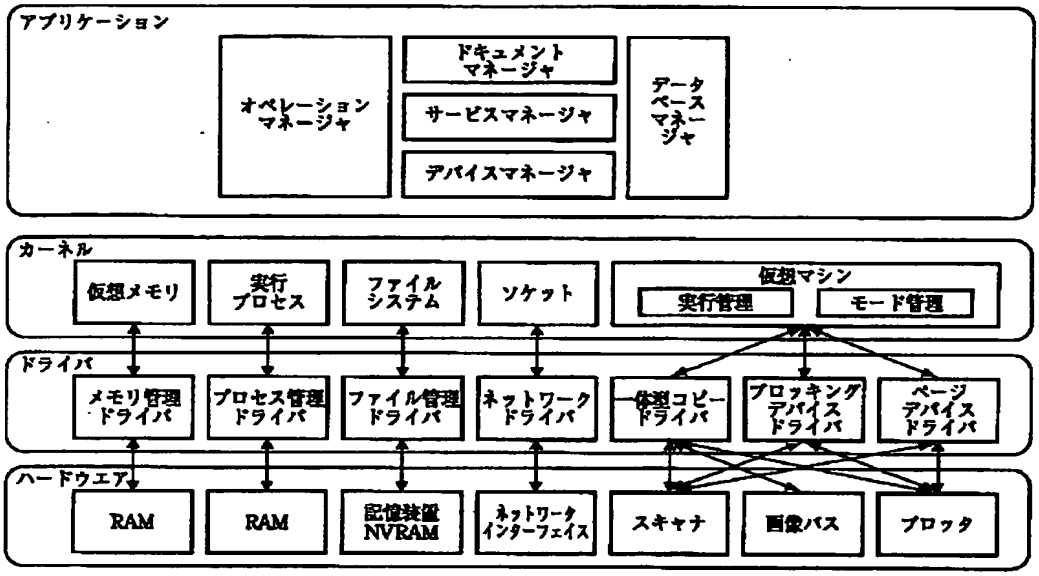
[Drawing 6]



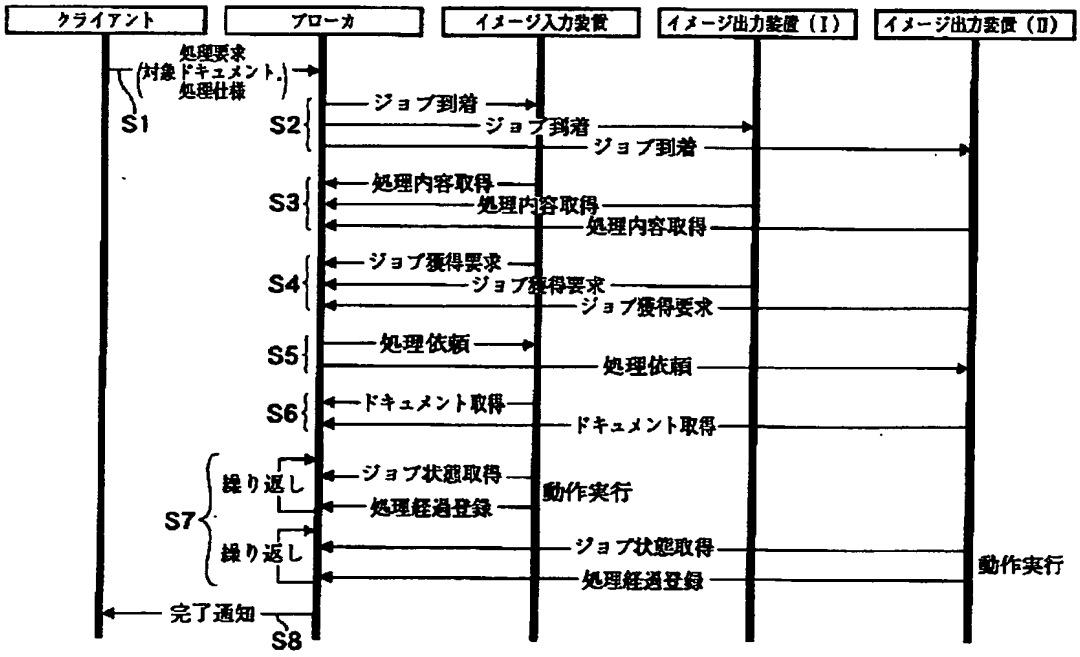
[Drawing 7]



[Drawing 2]

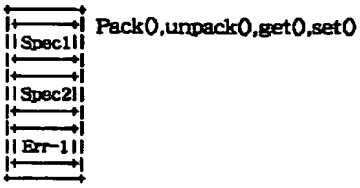


[Drawing 4]

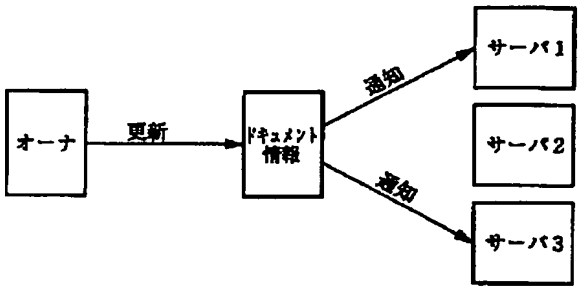


[Drawing 11]

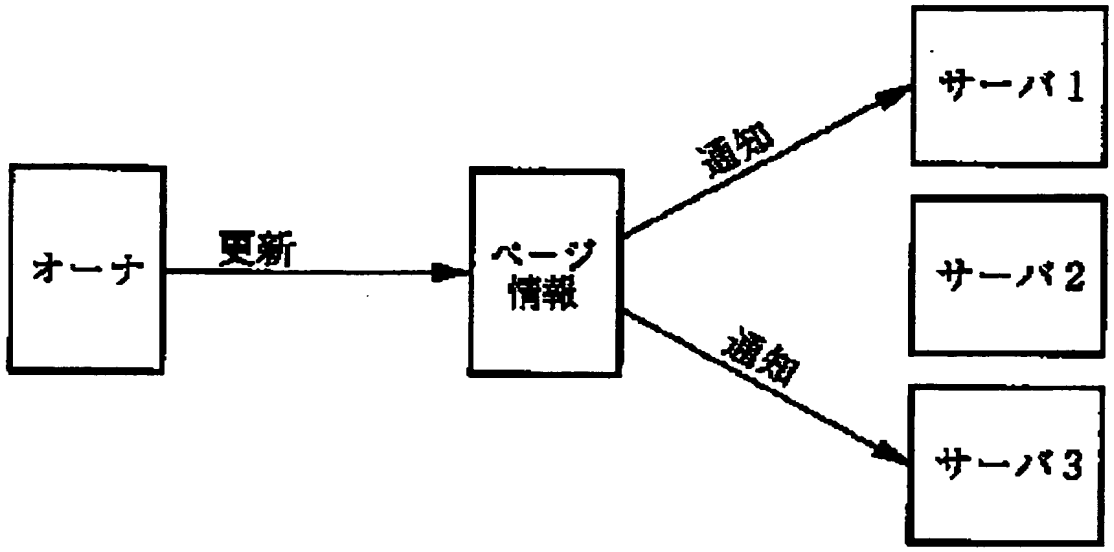
Packetクラス



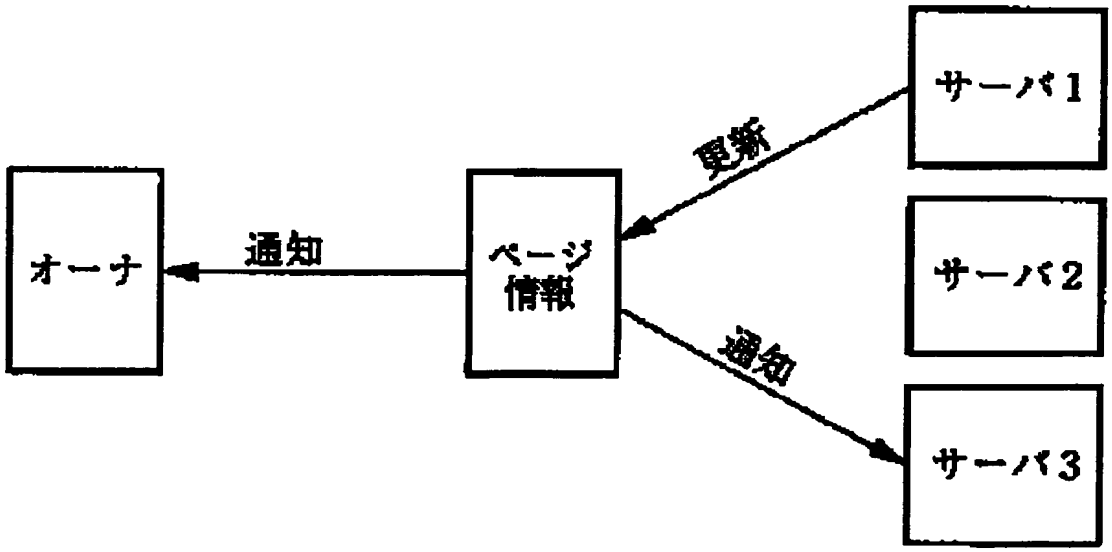
[Drawing 8]



[Drawing 9]

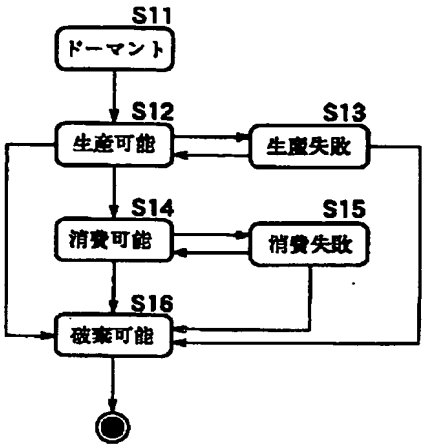

オーナ
更新
ページ情報
通知
通知
サーバ1
サーバ2
サーバ3

(A)


オーナ
通知
ページ情報
更新
通知
サーバ1
サーバ2
サーバ3

(B)

[Drawing 10]



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